

## CONTENTS

NO. 1 FEBRUARY 1993

- E. BAMBERG, H.-J. BUTT, A. EISENRAUCH AND K. FENDLER. Charge transport of ion pumps on lipid bilayer membranes 1  
E. S. KEMPNER. Damage to proteins due to the direct action of ionizing radiation 27  
A. T. BRÜNGER AND M. NILGES. Computational challenges for macromolecular structure determination by X-ray crystallography and solution NMR-spectroscopy 49

NO. 2 MAY 1993

- NEWS FROM THE INTERNATIONAL UNION FOR PURE AND APPLIED BIOPHYSICS 127  
D. M. J. LILLEY AND R. M. CLEGG. The structure of branched DNA species 131  
V. P. SKULACHEV. Interrelations of bioenergetic and sensory functions of the retinal proteins 177  
L. V. YAKUSHEVICH. Nonlinear dynamics of biopolymers: theoretical models, experimental data 201

NO. 3 AUGUST 1993

- R. A. BECKMAN AND L. A. LOEB. Multi-stage proofreading in DNA replication 225  
M. J. J. M. ZVELEBIL AND J. M. THORNTON. Peptide-protein interactions: an overview 333

NO. 4 NOVEMBER 1993

- M. S. P. SANSON. Structure and function of channel-forming peptaibols 365  
F. M. RICHARDS AND W. A. LIM. An analysis of packing in the protein folding problem 423